1176-37-163   **Nikos Frantzikinakis*** (`frantzikinakis@gmail.com`). *Joint ergodicity of sequences and applications.*

A collection of integer sequences is jointly ergodic if for every ergodic measure preserving system the multiple ergodic averages, with iterates given by this collection of sequences, converge in the mean to the product of the integrals. We give necessary and sufficient conditions for joint ergodicity that are flexible enough to recover most of the known examples of jointly ergodic sequences and also allow us to answer some related open problems. An interesting feature of our arguments is that they avoid deep tools from ergodic theory that were previously used to establish similar results. Our approach is primarily based on an ergodic variant of a technique pioneered by Peluse and Prendiville in order to give quantitative variants for the finitary version of the polynomial Szemerédi theorem. (Received January 21, 2022)